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ABSTRACT

Multimedia, the latest revolution in pedagogy, has been both embraced and rejected by teachers, education critics, and parents. To be effective educators, teachers must critically examine these new tools and learn how to use them properly--as part of well-thought-out curricula with clearly defined goals and objectives. This paper argues that the future of multimedia technologies in K-12 classrooms, particularly as pertaining to language arts instruction, rests primarily in the hands of the teachers. As background, the paper outlines some philosophical and theoretical approaches to information technology (IT) and multimedia. It then presents case studies from K-12 classrooms, multimedia applications such as "talking books"--CD-ROM or Web-based programs that present stories through a combination of screen text, voice-over, pictures and animation. The paper notes that the new technologies have already been transformed from specialized tools demonstrated by a trained technical elite to teaching tools accessible by any willing educator or student and finds that this transformation is due to the evolution of increasingly user-friendly multimedia authoring tools. It concludes that the true potential of multimedia processes is rooted in their interactive nature and the investment and participation of both the teaching and the learning user. (Contains a 15-item bibliography.) (NKA)

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Teaching Language Arts with New Technologies: The Role of Multimedia and the Responsibilities of Teachers

By Abida Ripley

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MultiMedia and Language Instruction

Abida Ripley

Teaching Language Arts With New Technologies:
The Role Of Multimedia And The Responsibilities Of Teachers

> The printed book... seems destined to move to the margin of our literate culture...the idea and the ideal of the book will change: print will no longer define the organization and presentation of knowledge, as it has for the past five centuries.
> - Jay David Balton (Provenzo 1999)

Multimedia, the latest revolution in pedagogy, has been both embraced and rejected by teachers, education critics and parents. Even in the traditional realm of reading instruction and basic print literacy, however, computers, the Internet and the multimedia technologies they have spawned are clearly here to stay. Given the rapid rate at which information technology has been evolving, many teachers have been slow in reacting to this important new technology.

To be effective educators, teachers must critically examine these new tools and learn to use them properly, as part of well-thought out curricula with clearly defined goals and objectives. This essay argues that the future of multimedia technologies in K-12 classrooms, particularly as pertaining to language arts instruction, rests primarily in the hands of the teachers. The promise of these exciting new multimedia technologies to improve the effectiveness of teaching will come to pass only under the knowledgeable leadership of real educators – teachers working in the traditional classroom.

Philosophical and Theoretical Approaches to IT and Multimedia

Modern multimedia teaching methods are largely a product of the last decade, the Internet era. In 1992, multimedia was still a "rapidly developing new technology" that educators were told to approach with caution (Head, 1992, p. 30). By 2001, however, multimedia was virtually synonymous with electronic media and the new Internet technology. Formally defined as any technology that combines different media (sound, text, photographs or

videos) in one presentation format, multimedia is now associated with networked computers and their media capabilities, as graphically delivered to users via the World Wide Web.

The most useful way of considering multimedia is as a process, rather than as a thing. Collins and colleagues, for example, define multimedia broadly as "a way of presenting material (often learning material) which involves three or more of the following media within a computer environment":

- speech or other sound
- drawings or diagrams
- animated drawings or diagrams
- still photographs or other images
- video clips
- text (printed word) (Collins et al, 1997, p. 4.

The multi-sense delivery of multimedia programs, in close association with children's media recreational activities (playing video games, watching television and films) and having the interactive element typical of better multimedia programs, all contribute to making the technology appealing to children. The challenge in working with multimedia has more to do with teachers than with students. Today's children spend nearly twice as much time learning from electronic media as they do from traditional sources of literacy and information (Quesada and Summers 1998, p. 30). The children are often more technologically savvy and computer literate than their teachers and regard time spent working with computers and CD-Roms as privileged activity.

In many classrooms, however, multimedia materials and computers remain tangential to the process of learning. They are used as a "reward" for good behavior, and their use is often unstructured and unfocused – in fact, it is often called "play" by both teachers and students (Collins et al., 1997). If teachers do not use multimedia processes to full advantage today, discussing applications of future teaching technologies is useless.

Resistance to or poor use of the new technology can be partially explained by "inadequate management of innovation" (Garner & Gillingham 1996, p. 11). New and unfamiliar equipment arrives in a class the week before schools starts, teachers are given a one-day workshop to learn how to operate it, and are then left in a lurch with little or no technological support. "Of all the professionals who use technology," writes Faigley, "teachers are probably the most poorly supported" (Garner & Gillingham, 1999, p.138).

Institutional "disincentives" are another possible barrier. Approaches to teaching that focus on "managing the class" favor seating-assigned textbook work rather than exploration of new technology with irregular or small-group situations (Garner and Gillingham, 1996, p.11). Moreover, as Hawisher and Selfe note, "keeping up with the new technologies can be a full-time job... and teachers already have a very full plate" (1999, pp. 1-3).

Although half of all American K-12 classes are now "wired" and equipped with a computer and Internet access, few classes use this technology as a formal part of their disciplines (Crane 2000, p. 3). Computers are still being used primarily to create documents or teach "computer skills." Crane (2000) provides a convincing argument as to why this must change. First, the web and multimedia transform classrooms into research laboratories, where the traditional lesson is the starting point for self-directed exploration. Second, these technologies encourage new directions in learning, moving "emphasis toward interactivity in the learning process." Third, by engaging students in the use of a variety of media, these activities heighten motivation. Fourth, the new media often require collaborative and project-based group activities, which may very well be the new model of doing business in the twenty-first century. Fifth, Web-based programs encourage students to communicate cross-culturally, which is of increasing importance in our shrinking world. Finally, these new media encourage the model of teachers as coaches helping students learn to learn (Crane, 2000, pp. 4-5).

The "secret of success" to teaching with multimedia lies not in the technology itself but the teachers' use of it. Making the switch in language arts instruction from grading essays to reviewing "multimedia websites as the students' main products" (Faigley 1999, p. 139) requires a large time commitment to teaching oneself new technologies on part of the teacher, as well as a considerable paradigm shift in how one understands teaching and learning, and even reading and writing.

Under the committed and enlightened leadership of well-trained teachers, multimedia can succeed, as is seen from the evidence of case studies from wired K-12 classrooms, in which teachers have pioneered multimedia teaching.

Case Studies from K-12 Classrooms

The most obvious application of multimedia to language arts instruction is in the form of the so called "talking books" – CD-ROM or Web-based programs that present stories through a combination of screen text, voice-over, pictures and animation (Collins et al., 1997, p. 31). A variety of these books is

currently on the market, with the majority aimed at young readers. Collins *et al* have observed learning through talking books in a number of elementary classrooms, and reported significant engagement and enjoyment of these "multi-layered books" by young readers. However, their research underlines that

> ...the quality of children's learning is dependent, at least in part, on the way the activity is organized by the teacher... without appropriate support and direction from the teacher, working with talking books can become a passive activity with little constructive learning. (Collins et al., 1997, p. 43)

This is a frequently-heard theme in evaluation of new media technologies: enthusiastic buy-in from the teachers, along with structured approaches and curricula, is necessary for multimedia learning to succeed. Garner and Gillingham studied internet communication projects in six American classrooms. The teachers who participated in the projects "celebrated the form" of telecommunications because it motivated their students to "practice speaking and writing willingly" (Garner & Gillingham 1996, p. 12). Students enjoyed it simply because they became engrossed in doing and learning things that interested them.

Garner and Gillingham found a number of interesting and positive patterns that held true across all six classrooms. They found that the Internet communication project stimulated both teachers and students to tell stories, to each other and to their communication recipients. Moreover, the computer activity was very social, both within the classroom context and the larger, electronic – World Wide Web – context. They also found that the technology (when it worked properly) became almost invisible. Finally, and for educators perhaps most importantly, they stressed that "teachers make an enormous difference." The teachers who participated in the project were eager to explore new ways of helping students learn. They were willing to "make some fundamental differences in the way they operate with students because they see a need to do so" (Garner & Gillingham, 1996, p. 136).

Many of these teachers were using multimedia teaching methods before the Internet, by integrating video, audio, reading, writing and presentation components in their lesson plans. Armstrong highlighted some of these exemplary "telecommunications" projects (1995, pp. 35-66), as well as sharing pioneering multimedia classroom activities produced by teachers internationally for use with a variety of subjects, including language arts. Armstrong recognizes that the "new,"

media-based, "model of teaching" may be stressful at first to teachers, clearly requiring a large learning curve, but she argues that the ultimate benefits are enormous. Among these benefits is seeing the excitement of your students:

> They become totally engaged in the learning process as they participate in real-life experiments and activities and converse with people all over the world about their questions, research, theories and findings. Students read more because of the interest generated by the medium... When they are writing to their peers or experts on a topic in another part of the country or world, they want to look good. As a result, they often put extra effort into the work they are sending. (Armstrong, 1995, p. 13)

Language arts curricula that integrate web resources and multimedia programs have the potential to engage students much more than traditional classroom activities. Crane showcases an interactive Shakespeare unit that combines exploration of the Globe Theater, Shakespeare's life and the Elizabethan world, bringing together reading, writing and research skills. She also provides sample language arts units that involve students in building their multimedia programs on the Web. Crane sees the use of the new technologies in language arts instructions as paramount, as it is "the basis for all work students will do in other curricular areas" (Crane, 2000, pp. 194-218).

The last two years have been marked by the continued development of IT and multimedia educational materials, as well as increased scholarship in the area of multi-media and web-based pedagogy. An abundance of literature is now available. Educators and academics have considered how to use the web to create student-centered curricula (Gillani, 2000), how to create learning and teaching environments that successfully integrate the new technologies (Dennis, 2000), and, of course, the new role the educator must take in this fluid, changing environment (Faigley, 1999, Sosnoski, 1999, Hawisher and Selfe, 1999, Daugherty *et al* 2000, O'Sullivan 2000).

Authoring Tools

The new technologies have already been transformed from specialized tools demonstrated by a trained technical elite to teaching tools accessible by any willing educator or student. This transformation is due to the evolution of multimedia authoring tools, which are increasingly user-friendly.

For web-based multimedia curricula, the programming language HTML – hypertext mark-up language – continues to be the standard. Today, it is frequently supplemented by more complex programming such as DHTML, Java Script and Flash technology, which allow the HTML-created web pages to be more dynamic.

HTML-based programming is very flexible and its limits are usually user-defined. As a result, however, it requires the user to be a competent programmer as well as a competent educator. However, while a basic knowledge of HTML is helpful to understanding the possibilities of web-based learning programs, other authoring tools sacrifice some of the flexibility inherent in writing one's own program for the sake of ease of use.

Macromedia's Action! for Windows is aimed at entry-level users who want to create interactive, multimedia presentations using text, graphics, animation, digital video and sound. Action contains more than 300 templates and is fully compatible with the popular Microsoft Suite software.

More sophisticated, Macromedia Dreamweaver 4 is focused directly on enabling users to create interactive web pages with engaging web-based learning content. It integrates visual layout tools, programming and text-editing in an intuitive interface, and, with the aid of such extension as Coursebuilder, incorporates Flash technology directly within the program.

Two additional programs from Macromedia deserve to be highlighted here. Authorware Professional is "an object-oriented program that allows nonprogrammers to develop extremely sophisticated hypermedia and multimedia programs" (Provenzo, 1999, p. 184). An associated program is Director, which adds animation, with full sound and graphic resources, to the program designer's toolkit. Similar to the latter is Asymetrix's Toolbook (Provenzo, 1999, p. 184).

Numerous other authoring programs exist, and more are being created in response to consumer demand. Ultimately, it is not the choice of the authoring program that determines the quality of the learning program: it is the knowledge, attitude and actions of the teacher.

We should end this discussion of multimedia software with a look at one of the most common features in multimedia programs and document: the use of hypertext and hypermedia. This application of technology has a profound impact on language arts and reading. Hypertext provides a link between a word or a phrase in a document or on a page and another document or page that contains an elaboration of that word or phrase. Its most basic application in multimedia programs resembles an instant dictionary: a child reads a paragraph that introduces a ***new word***, and selecting that new word takes the child to a new screen that displays the word's definition. Hypertext is

frequently used in both talking books and in on-line presentations of text. It changes reading from a linear, very structured experience with a clearly defined beginning, middle and end to a reader-driven activity marked by a variety of choices. Sosnoski(2000), explores the positive and negative implications of hyper-reading in some detail; for our purposes, it is important to note that good use of hypertext and hyper-reading adds to a reader's enjoyment and understanding of material and bad use of hypertext provides a disjointed reading experience that may be hard to synthesize. Once again, we return to the role of the teacher, who must choose the appropriate program and structure an effective lesson plan around it.

The Future is Now

The enthusiasm over the potential of multimedia to change the delivery of education is not new. The advent of radio and television, the popular availability of film reels and videos, and the first unwieldy computer all brought with them an early enthusiasm that this particular medium would revolutionize, if not education itself, then at least its delivery. While each has contributed something to the pedagogical tool kit – it is hard to imagine teaching foreign languages without the aid of audio cassettes or social studies without viewing videos – none has had a truly revolutionary impact. Are multimedia technologies different?

Yes, they are, or at least they have the potential to be revolutionary in literacy instruction. The discussion above showed that the true potential of multimedia processes is rooted in their interactive nature and the investment and participation of both the teaching and the learning user. Watching a video is a passive activity – it is through the teacher-led discussion afterwards that it becomes an interactive, focused task. Similarly, the best multimedia activities are not merely those that engage the largest number of senses, but those that are interactive and demand the participation of the student. They still required enthusiastic and structured direction from the teacher. Multimedia-based language and reading programs have enormous potential, but it is still the classroom teacher who holds the key that can unlock this potential.

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